WHAT IS CLAIMED IS

1. A method for fabricating a semiconductor device comprising the steps of:

forming over a semiconductor substrate a first dummy electrode and a second dummy electrode, the first dummy electrode and the second dummy electrode being formed of a material-to-be-substituted which is substitutable with a material containing a metal;

forming a first metal film of a first metal material on the first dummy electrode;

conducting a thermal treatment at a first temperature to substitute the first dummy electrode with a first electrode of the first metal material or a compound of the first metal material;

forming a second metal film of a second metal material on the second dummy electrode; and

conducting a thermal treatment at a second temperature, which is lower than the first temperature and at which an interdiffusion of constituent materials between the first electrode and the second metal film does not take place, to substitute the second dummy electrode with a second electrode of the second metal material or a compound of the second metal material.

2. A method for fabricating a semiconductor device comprising the steps of:

forming over a semiconductor substrate a first dummy

electrode and a second dummy electrode, the first dummy electrode and the second dummy electrode being formed of a material-to-be-substituted which is substitutable with a material containing a metal;

forming a protection film on the second dummy electrode;

forming a first metal film of a first metal material on the first dummy electrode and the protection film;

conducting a thermal treatment at a first temperature to substitute the first dummy electrode with a first electrode of the first metal material or a compound of the first metal material;

removing the protection film;

forming a second metal film of a second metal material on the second dummy electrode; and

conducting a thermal treatment at a second temperature, which is lower than the first temperature and at which an interdiffusion of constituent materials between the first electrode and the second metal film does not take place, to substitute the second dummy electrode with a second electrode of the second metal material or a compound of the second metal material.

3. A method for fabricating a semiconductor device according to claim 2, wherein

in the step of forming the protection film, the protection film is deposited on the second dummy electrode.

4. A method for fabricating a semiconductor device

according to claim 2, wherein

in the step of forming the protection film, a surface of the second dummy electrode is chemically treated to form the protection film.

5. A method for fabricating a semiconductor device according to claim 4, wherein

in the step of forming the protection film, the second dummy electrode is exposed to an oxygen atmosphere to form the protection film of an oxide of the material-to-be-substituted.

6. A method for fabricating a semiconductor device according to claim 2, further comprising, before the step of forming the first metal film, the step of:

forming a third metal film which improves an adhesion between the protection film and the first metal film.

7. A method for fabricating a semiconductor device comprising the steps of:

forming over a semiconductor substrate a first dummy electrode and a second dummy electrode, the first dummy electrode and the second dummy electrode being formed of a material-to-be-substituted which is substitutable with a material containing a metal;

removing the first dummy electrode;

forming a conducting film of a first metal material or a compound of the first metal material in a region where the first dummy electrode has been removed to form a first electrode

of the conducting film;

forming on the second dummy electrode a second metal film of a second metal material which causes not an interdiffusion of constituent materials with respect to the first electrode; and

conducting a thermal treatment to substitute the second dummy electrode with a second electrode of the second metal material or a compound of the second metal material.

8. A method for fabricating a semiconductor device according to claim 1, wherein

in the step of forming the second metal film, the second metal film is formed selectively on the second dummy electrode.

9. A method for fabricating a semiconductor device according to claim 7, wherein

in the step of forming the second metal film, the second metal film is formed selectively on the second dummy electrode.

10. A method for fabricating a semiconductor device according to claim 1, wherein

in the step of forming the second metal film, the second metal film is formed, extended on the first electrode.

11. A method for fabricating a semiconductor device according to claim 7, wherein

in the step of forming the second metal film, the second metal film is formed, extended on the first electrode.

12. A method for fabricating a semiconductor device comprising the steps of:

forming over a semiconductor substrate a first dummy electrode and a second dummy electrode, the first dummy electrode and the second dummy electrode being formed of a material-to-be-substituted which is substitutable with a material containing a metal;

forming a first metal film of a first metal material in a region where the first dummy electrode and the second electrode are formed;

forming a second metal film of a second metal material in a region where the second dummy electrode is formed; and

conducting a thermal treatment to substitute the first dummy electrode with a first electrode of the first metal material or a compound of the first metal material and substitute the second dummy electrode with a second electrode of an alloy of the first metal material and the second metal material or an compound of the alloy.

13. A method for fabricating a semiconductor device according to claim 1, further comprising, after the step of forming the second metal film, the step of:

forming on the second metal film a fourth metal film which reacts with the material-to-be-substituted to absorb the material-to-be-substituted.

14. A method for fabricating a semiconductor device according to claim 7, further comprising, after the step of forming the second metal film, the step of:

forming on the second metal film a fourth metal film

which reacts with the material-to-be-substituted to absorb the material-to-be-substituted.

15. A method for fabricating a semiconductor device according to claim 12, further comprising, after the step of forming the second metal film, the step of:

forming on the second metal film a fourth metal film which reacts with the material-to-be-substituted to absorb the material-to-be-substituted.

16. A method for fabricating a semiconductor device according to claim 1, further comprising, after the step of forming the second electrode, the step of:

patterning the second metal film to form an interconnection layer.

17. A method for fabricating a semiconductor device according to claim 7, further comprising, after the step of forming the second electrode, the step of:

patterning the second metal film to form an interconnection layer.

18. A method for fabricating a semiconductor device according to claim 1, wherein

the material-to-be-substituted is silicon; and

the compound of the first metal material or the compound of the second metal material is a metal silicide.

19. A method for fabricating a semiconductor device according to claim 7, wherein

the material-to-be-substituted is silicon; and

the compound of the first metal material or the compound of the second metal material is a metal silicide.

20. A method for fabricating a semiconductor device according to claim 12, wherein

the material-to-be-substituted is silicon; and

the compound of the first metal material or the compound of the second metal material is a metal silicide.

21. A method for fabricating a semiconductor device comprising the steps of:

forming over a semiconductor substrate a first dummy electrode formed of silicon and containing a first impurity and a second dummy electrode formed of silicon and containing a second impurity different from the first impurity;

forming a metal film on the first dummy electrode and the second dummy electrode;

reacting the first dummy electrode and the second dummy electrode with the metal film to substitute the first dummy electrode with a first electrode of a metal silicide with the first impurity doped in and substitute the second dummy electrode with a second electrode of a metal silicide with the second impurity doped in.

22. A method for fabricating a semiconductor device according to claim 1, wherein

in the step of forming the first dummy electrode and the second dummy electrode, the first dummy electrode and the second dummy electrode are formed in one continuous pattern.

23. A method for fabricating a semiconductor device according to claim 7, wherein

in the step of forming the first dummy electrode and the second dummy electrode, the first dummy electrode and the second dummy electrode are formed in one continuous pattern.

24. A method for fabricating a semiconductor device according to claim 12, wherein

in the step of forming the first dummy electrode and the second dummy electrode, the first dummy electrode and the second dummy electrode are formed in one continuous pattern.

25. A method for fabricating a semiconductor device according to claim 21, wherein

in the step of forming the first dummy electrode and the second dummy electrode, the first dummy electrode and the second dummy electrode are formed in one continuous pattern.

26. A method for fabricating a semiconductor device according to claim 1, further comprising, after the step of forming the first dummy electrode and the second dummy electrode, the steps of:

forming an insulating film; and

removing the insulating film planarly until the upper surfaces of the first dummy electrode and the second dummy electrode are exposed.

27. A method for fabricating a semiconductor device according to claim 7, further comprising, after the step of forming the first dummy electrode and the second dummy electrode,

the steps of:

forming an insulating film; and

removing the insulating film planarly until the upper surfaces of the first dummy electrode and the second dummy electrode are exposed.

28. A method for fabricating a semiconductor device according to claim 12, further comprising, after the step of forming the first dummy electrode and the second dummy electrode, the steps of:

forming an insulating film; and

removing the insulating film planarly until the upper surfaces of the first dummy electrode and the second dummy electrode are exposed.

29. A method for fabricating a semiconductor device according to claim 21, further comprising, after the step of forming the first dummy electrode and the second dummy electrode, the steps of:

forming an insulating film; and

removing the insulating film planarly until the upper surfaces of the first dummy electrode and the second dummy electrode are exposed.

30. A method for fabricating a semiconductor device according to claim 1, further comprising, after the step of forming the first dummy electrode and the second dummy electrode, the step of:

forming an impurity diffused region in the semiconductor

substrate by self-alignment with the first dummy electrode or the second dummy electrode.

31. A method for fabricating a semiconductor device according to claim 7, further comprising, after the step of forming the first dummy electrode and the second dummy electrode, the step of:

forming an impurity diffused region in the semiconductor substrate by self-alignment with the first dummy electrode or the second dummy electrode.

32. A method for fabricating a semiconductor device according to claim 12, further comprising, after the step of forming the first dummy electrode and the second dummy electrode, the step of:

forming an impurity diffused region in the semiconductor substrate by self-alignment with the first dummy electrode or the second dummy electrode.

33. A method for fabricating a semiconductor device according to claim 21, further comprising, after the step of forming the first dummy electrode and the second dummy electrode, the step of:

forming an impurity diffused region in the semiconductor substrate by self-alignment with the first dummy electrode or the second dummy electrode.

34. A semiconductor device comprising:

a first transistor of a first conduction type including a first gate electrode formed of aluminum; and

a second transistor of a second conduction type including a second gate electrode formed of a refractory metal, a refractory metal silicide or a refractory metal nitride.

35. A semiconductor device comprising:

a first transistor of a first conduction type including a first gate electrode formed of a first metal silicide; and

a second transistor of a second conduction type including a second gate electrode formed of a second metal silicide a reaction temperature of which is higher than that of the first metal silicide.

36. A semiconductor device comprising:

a first transistor of a first conduction type including a first gate electrode formed of a metal silicide containing a first impurity; and

a second transistor of a second conduction type including a second gate electrode formed of the metal silicide containing a second impurity different from the first impurity.

37. A semiconductor device according to claim 34, wherein

the first gate electrode and the second gate electrode are formed in one continuous pattern.

38. A semiconductor device according to claim 35, wherein

the first gate electrode and the second gate electrode are formed in one continuous pattern.

39. A semiconductor device according to claim 36,

wherein

the first gate electrode and the second gate electrode are formed in one continuous pattern.

40. A semiconductor device according to claim 34, wherein

the first conduction type is an n-type, and the second conduction type is a p-type.